

IN THE CLAIMS:

This listing of the claims replaces all previous versions and listings of the claims.

1. (Currently amended) A method for achieving a trim amount of a feature on a substrate in a chemical oxide removal process comprising:

setting a process recipe for said chemical oxide removal process, wherein said setting said process recipe comprises setting an amount of a first process gas, and setting an amount of a second process gas;

determining a relationship between a trim amount of said feature and an amount of an inert gas, wherein said relationship is established for an amount of a first process gas, and an amount of a second process gas;

adjusting said process recipe for said chemical oxide removal process in order to achieve said trim amount by setting an amount of ~~[[an]]~~ the inert gas;

chemically treating said feature on said substrate by exposing said substrate using said process recipe; and

substantially removing said trim amount from said feature, wherein said determining said relationship includes curve-fitting either said trim amount data as a function of said amount of said inert gas or said amount of said inert gas as a function of said trim amount data.

2. (Original) The method of claim 1, wherein said substantially removing said trim amount from said feature comprises thermally treating said substrate by elevating the temperature of said substrate following said chemical treating.

3. (Original) The method of claim 1, wherein said substantially removing said trim amount from said feature comprises rinsing said substrate in a water solution following said chemical treating.

4. (Original) The method of claim 1, wherein said setting said amount of said first process gas includes setting an amount of HF, and said setting said amount of said second process gas includes setting an amount of NH₃.

5. (Original) The method of claim 1, wherein said setting said amount of said inert gas includes setting an amount of argon.
6. (Original) The method of claim 1, wherein said chemically treating said feature includes introducing said first process gas independently from said second process gas.
7. (Original) The method of claim 1, wherein said setting said process recipe further includes setting a pressure.
8. (Original) The method of claim 1, wherein said setting said process recipe further includes setting a temperature of said substrate.
9. (Original) The method of claim 1, wherein said setting said process recipe further includes setting a time period for chemically treating said substrate.
10. (Original) The method of claim 1, wherein said setting said process recipe further includes setting a temperature of a chemical treatment process for chemically treating said substrate.
11. (Original) The method of claim 1, wherein said chemically treating said feature includes chemically treating a silicon oxide feature.
12. (Currently amended) A method for trimming a feature on a substrate using a chemical oxide removal process comprising:
 - determining a relationship between a trim amount of said feature and an amount of an inert gas, wherein said relationship is established for an amount of a first process gas, and an amount of a second process gas;
 - selecting a target trim amount;
 - selecting a target amount of inert gas for achieving said target trim amount using said relationship;
 - chemically treating said feature on said substrate by exposing said substrate to said amount of said first process gas, said amount of said second process gas, and said target amount of said inert gas; and

substantially removing said target trim amount from said feature, wherein said determining said relationship includes curve-fitting either said trim amount data as a function of said amount of said inert gas or said amount of said inert gas as a function of said trim amount data.

13. (Original) The method of claim 12, wherein said substantially removing said target trim amount from said feature comprises thermally treating said substrate by elevating the temperature of said substrate following said chemical treating.

14. (Original) The method of claim 12, wherein said substantially removing said target trim amount from said feature comprises rinsing said substrate in a water solution following said chemical treating.

15. (Original) The method of claim 12, wherein said relationship is established for said amount of said first process gas and said amount of said second process gas includes a relationship for an amount of HF and amount of NH_3 .

16. (Original) The method of claim 12, wherein said relationship between a trim amount of said feature and an amount of an inert gas includes a relationship between a trim amount of said feature and an amount of argon.

17. (Original) The method of claim 12, wherein said chemically treating said feature includes introducing said first process gas independently from said second process gas.

18. (Original) The method of claim 12, wherein said relationship is further established for a pressure.

19. (Original) The method of claim 12, wherein said relationship is further established for a temperature of said substrate.

20. (Original) The method of claim 12, wherein said relationship is further established for a time period of said chemical treating.

21. (Original) The method of claim 12, wherein said chemically treating said feature includes chemically treating a silicon oxide feature.
22. (Original) The method of claim 12, further comprising:
optimizing said relationship in order to minimize an error in a trim amount, wherein said error in said trim amount is determined from translating a difference between said trim amount data and said relationship into said error in said trim amount using said relationship.
23. (Canceled)
24. (Currently amended) The method of claim ~~[[23]]~~ 12, wherein said curve-fitting comprises fitting with polynomial expressions.
25. (Original) The method of claim 24, further comprising:
optimizing said relationship in order to minimize an error in a trim amount, wherein said error in said trim amount is determined from translating a difference between said trim amount data and said relationship into said error in said trim amount using said relationship.
26. (Original) The method of claim 25, wherein said optimizing includes adjusting the order of said polynomial expressions.
27. (Currently amended) The method of claim ~~[[23]]~~ 12, wherein said curve-fitting includes curve-fitting two or more process regimes within said trim amount data and said amount of said inert gas.
28. (Original) The method of claim 27, wherein said chemically treating said feature includes using a separate mass flow controller for each process regime.
29. (Original) A method for achieving a trim amount of a silicon oxide feature on a substrate in a chemical oxide removal process comprising:
setting a process recipe for said chemical oxide removal process, wherein said setting said process recipe comprises setting an amount of HF, and setting an amount of NH₃;

adjusting said process recipe for said chemical oxide removal process in order to achieve said trim amount by setting an amount of argon;

chemically treating said feature on said substrate by exposing said substrate using said process recipe, wherein said amount of HF is introduced independently from said amount of said NH_3 , and said amount of argon is introduced with said amount of NH_3 ; and

substantially removing said trim amount from said feature, wherein increasing said amount of argon corresponds to decreasing said trim amount.

30. (Withdrawn – Currently amended) A system for achieving a trim amount on a substrate in a chemical oxide removal process comprising:

a chemical treatment system for altering exposed surface layers on said substrate by exposing said substrate to an amount of a first process gas, an amount of a second process gas, and an amount of an inert gas;

a thermal treatment system for thermally treating said chemically altered surface layers on said substrate; and

a controller coupled to said chemical treatment system and configured to determine a relationship between a trim amount of said feature and said amount of said inert gas, wherein said relationship is established for said amount of said first process gas, and said amount of said second process gas and adjust said amount of said inert gas in order to achieve said trim amount, wherein said determination of said relationship includes curve-fitting either said trim amount data as a function of said amount of said inert gas or said amount of said inert gas as a function of said trim amount data.